Jaundice
Measles
Headache

An Essay on Scorbutus.

(Scurvy)

by

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Whatsoever man be scurvy or scabbed. Lev. XXI. v. 20.

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Scorbutus, is a formidable and often fatal disease, arising from imperfect nutrition, and other causes, and characterized principally by extreme depression of the vital powers, together with sponginess of the gums, ecchymoses, or purple blotches, on the skin and spontaneous hemorrhages. From its frequent occurrence in long voyages; it is sometimes called emphatically the sea scurvy; but it is by no means peculiar to seamen, and was described as an endemic of the land by the earliest writers.

After having stated this brief character of the disease, it may be necessary to remark, that the scurvy is most erroneously and absurdly used in popular language; being applied to several diseases of the skin, of a slow and chronic nature, although various in their essential character and possessing nothing in common with the true scurvy. The skin, in scurvy is not indeed the seat of the disease, but only becomes deranged, like other organs of the body, in the progress of the malady; and that derangement is totally different from the inflammatory, simply, pustular, or scaly conditions of the skin, which occur in leprosy, tetters, and other cutaneous disorders, usually miscalled scorbutic. This mistake requires correction, not merely as a matter of

nomenclature, but because a great practical error results from it; namely, the administration of antiscorbutic remedies in these cutaneous disorders, which cannot be cured, and are often aggravated by them.

The scurvy properly so called, was first accurately described, and received its name in modern times; and it is subject of dispute, as in the case of some other diseases, whether it was known to the ancient physicians, or is a malady of more recent origin. The first specific accounts of the disease appeared in the early part of the sixteenth century, when the name of the malady seems to have been familiar among the vulgar: but the symptoms were noticed by the early voyages in the preceding century; for considerably more than half the crew, who accompanied Vasco de Gama, in his voyage around the Cape of Good Hope, in the year 1497, were destroyed by this disease. Olaus Magnus in his history of the northern nations, published in the year 1555, has described the disease at considerable length, and states that it was known to the inhabitants of Saxony by the name of Schorbuk, whence the Latin term scorbutus, and our appellation scurvy. The term signified soremouth, and was probably applied to the disease in consequence of the spongy ulcerations of the gums, with hemorrhages, and loosening of the teeth, which are

among the more severe symptoms of the complaint. Dr. Lind, however, suggests with still more probability, that the name was derived from a Sclavonic word, Scorb, signifying disease; the scurvy being endemic in the northern countries of Europe, from whence the name was borrowed. Most of the European writers have maintained that, although the ancients have not described the symptoms of scurvy, as a single distinct disease, they have mentioned several concurring symptoms, which can scarcely be supposed to belong to any other malady. Hippocrates was an accurate observer of diseases, when describing the diseases of the spleen, mentions some symptoms which accompany the enlargement of that organ. "The colour of the body is changed, and becomes black and pallid, like the rind of a pomogranate; the breath is fetid, and the gums emit a bad smell, and fall away from the teeth, ulcerations break out in the legs, the limbs are emaciated and the bowels do not discharge their contents". And again in his second book of prognostics, he observes, "In those who have tumid spleens, the gums are diseased, and the mouth emits a fetid odour; but those whose spleens are enlarged, without any consequent hemorrhages, such persons are attacked with ill conditioned ulcers in the legs, and

black scars." Here we have an additional symptom of scurvy mentioned, viz, the hemorrhages which were omitted in the former description. At another time he mentions the symptoms of the [ΕΙΛΕΟΣ ΑΙΜΑΤΙΤΗΣ] or bloody iliac disease, in nearly the same terms. "This disease begins in the autumn, and exhibits the following symptoms. The mouth and teeth emit a fetid smell, and the gums seperate from the latter, and blood flows from the nose; sometimes also ulcers break out in the legs, and while some of them heal, others break out afresh; and the skin about them is of a black colour, thin, and tender." This may be deemed a good brief description of scurvy, considering the early age in which it was written, and the state of the science of physic at that time. Celsus when treating of the affections of the spleen, mentions this indisposition of ulcers to heal. "Ulcera aut omnino non sanescunt, aut certe cicatricem vix recipiunt." Paulus Ægineta and Avicenna as well as other Greek and Arabian physicians, describe the same scorbutic symptoms as connected with tumid spleen, but such an elargement is not always present, and it is probable that Hippocrates and the ancients who saw the disease but seldom, had generalized too hastily from a limited experience, when they pronounced these symptoms as exclusively

connected with enlarged spleen.

A desease is also mentioned by Strabo and Pliny as occurring in the Roman armies in particular situations, which can only be referred to scurvy. In this disease, which Pliny ascribed to drinking the water of a certain well, when it occurred in the army of Germanicus while encamped near the Rhine, an affection of the gums, with a falling out of the teeth, is said to have been combined with a loss of muscular power in the lower extremities; He also makes mention of a certain herb called Britannica, which proved very serviceable in the cure of said disease, and from the description given of it, it is generally believed to be the plant which is very well known to us, by the popular name of scurvy-grass and Cochlearia Officinalis of Linneus.

On the whole, therefore, we are disposed to believe, with the early writers upon this subject, that the scurvy was known to the Greek, Roman, and Arabian Physicians; although from its comparative unfrequency in Southern climates, it did not occur so often, or so extensively, as to claim their attention very strongly. That it may occur in any climate where there is a dearth of fresh food, is very obvious; for it is found equally at sea and on the land, in Green=land or in the great South sea in besieged towns, in frozen countries, and in ships, where fresh food is not to be obtained.

Symptoms.

The first indication of the approach of scurvy is an aversion to any sort of muscular exertion; a lassitude or strong inclination to sit still or lie in bed; which is accompanied with a spontaneous lassitude, or a sense of heaviness and pain throughout the body, and especially in the muscles of the limbs, and loins, like that which arises from great fatigue, which soon becomes actual feebleness, so that the least exercise, especially in ascending or descending a declivity, induces fatigue and shortness of breath. With the aversion to motion and diminished power of exertion, there is also very early a change of the complexion, which becomes pale and bloated, or sallow, especially about the lips and corners of the eyes, where there is a greenish tinge. These two symptoms, indeed, the disinclination to exertion, and the sallow countenance, often portend the approach of scurvy; while the patient eats and drinks heartily, and seems otherwise in good health: and the steady lassitude and difficulty of breathing upon motion, are among the most constant concomitants of the distemper throughout its course. As the disease advances, other symptoms appear. Among these one the stomacace or morbid condition of the mouth, is one of the first that presents itself. The gums become hot and painful, and soon swell, growing soft and spongy, of a livid hue, and afterwards extremely putrid

and fungous, constituting one of the most distinguished features of the disease. This occasions great fetor of the breath, and the loosening of the teeth, which become moveable in their sockets, and may be taken out without force and pain, and ~~even~~ fall out spontaneously. Hemorrhages also take place from the slightest injury on the gums, or even without any apparent cause, as well as from the nose, and ultimately from other parts of the body, where the cuticle is delicate, or the surface broken, in consequence of the apparent loss of cohesion in the solids, and especially in the vascular system.

From this cause the skin also exhibits some of the most striking characteristics of scurvy. It becomes dry, and spotted over with discolourations of a red, bluish, purple, and black hue, of various sizes, from the petechiæ, or spots like flea-bites, to the most extensive ecchymoses, of the size of a hand-breadth, or larger, such as are produced by the severest bruises. These appear chiefly on the legs and thighs; ~~and~~ sometimes also on the arms, breast, and trunk of the body; and occasionally, though more rarely on the head and face. They consist in fact of effusions of blood under the cuticle, from the rupture of the small vessels. As the disease advances, this laxity and loss of cohesion in all the solids become still more manifest, by the frequent and profuse bleedings which are liable to occur from different parts of the body; especially from

the nose, gums, stomach, bowels, lungs, kidnies, and bladder, and from the ulcers and fungous excrescencies which arise on the surface. In some patients, the hemorrhages from the bowels are accompanied by severe pains and diarrhœa; while others without either a purging or gripes discharge great quantities of pure blood by the anus. Other marks of laxity appear in the œdematous swelling which takes place in the legs, beginning first about the feet and ankles; which, however, is more painful than common anasarca; and retain longer the impression of the finger. They appear remarkably also, in the great facility with which the slightest bruises and wounds degenerate into foul fungous ulcers, as well as in the spontaneous appearance of such ulcers, and the breaking out of long healed sores, and even the disunion of old fractures in bones. "Whatever former complaints" Dr. Lind observes, "the patient has had, especially bruises, wounds, &c; or whatever present disorders he labours under, upon being afflicted with the scurvy, his old complaints are removed, and his present rendered worse". Indeed the scurvy often first shows itself by the changes in diseased parts. "Thus when a person has had a preceding fever, or a tedious sickness, by which he has been much exhausted, the gums for the most part are first affected, and a lassitude constantly attends: whereas when one has been confined

from exercise by having a fractured bone, or from a bruise, or hurt, these weak and debilitated parts become almost always first scorbutic. As for example, if a patient labours under a strain of the ankle; the leg, by becoming swelled and painful, and soon after covered with livid spots, gives the first indication of the disease. And as old ulcers on the legs are very frequent among seamen, in this case likewise the legs are always first affected, and these ulcers put on a scorbutic appearance, although the patient seems otherwise perfectly healthy, and preserves a fresh and good colour in his face." The effect of the disease upon former maladies is strongly depicted by the author of lord Ansons voyage. "But a most extraordinary circumstance, and which would be scarcely credible upon any single evidence, is that the scars of wounds which had been for many years healed, were forced open again by this virulent distemper. Of this there was a remarkable instance in one of the invalids on board the Centurion, who had been wounded above fifty years before at the battle of the Boyne; for though he was cured soon after, and had continued well for a great number of years past, yet on his being attacked by the scurvy, his wounds in the progress of his disease, broke out afresh, and appeared as if they had never been healed. Nay, what is still more astonishing, the callus of a broken bone, which had been completely formed for

a long time, was found to be hereby dissolved, and the fracture seemed as if it had never been consolidated." The ulcers which occurred in the legs of the scorbutic patients on this occasion, are said to have been, of the worst kind, attended with rotten bones, and such a luxuriance of fungous flesh as yielded to no remedy.

The edges of these scorbutic ulcers are of a livid colour, and puffed up with fungous excrescences, which are not inaptly called by the sailors, bullock's liver, since to this substance, when boiled Dr. Lind says, they bear a near resemblance, both in consistence and colour. They often arise in the course of a night to a monstrous size, and although destroyed by caustics, or the knife [in which last case a copious bleeding commonly ensues] are found at the next dressing as large as ever, Dr. Lind adds, however, that "they continue in the condition a considerable time without tainting the bone." These scorbutic ulcers, which are singular and uniform in their character, are distinguished from all others by being so remarkably offensive, bloody, and fungous. In addition to these affections of the lower extremities, in the advanced stage of the scurvy, "the patients most commonly lose the use of their limbs, having a contraction of the tendons in the ham, with a swelling and pain in the joint of the knee. Indeed, a stiffness in these tendons, and a weakness of the knees,

appear pretty early in this disease, generally terminating in a contracted and swelled joint."

In the progress of the scurvy, the patients commonly complain of pains which are often moving from part to part. Some complain of a general pain in their bones, which is most violent in the limbs and loins, and especially in their joints and legs; and a pain, with tightness and oppression in the breast, is very common. The head is seldom or never affected, unless the patient is feverish, which is unusual; for as Dr. Lind well observes, the disease is altogether of a chronic nature, and fever may be justly reckoned among its adventitious symptoms. It is remarkable, indeed, that in the worst stages of the scurvy, with all the severe symptoms above described, with painful spreading ulcers of the surface, with contracted limbs, hemorrhages, spongy, putrid, stinking gums, over-run with spouting flesh, and often deeply ulcerated; with inability to make the least muscular exertion, without fainting or perhaps dying; yet the patients, even in this stage have a good appetite, with their senses entire, and, although easily dejected and made low spirited, yet, when in bed, they make no complaint of pain or sickness, and appear to be in tolerable health. This singular characteristic of the disease is well depicted by the author of Lord Anson's voyage before

quoted. "Indeed, the effects of this disease, were in almost every instance wonderful; for many of our people, though confined to their hammocks, appeared to have no inconsiderable share of health: for they ate and drank heartily, were cheerful and talked with much seeming vigour, and with a loud strong tone of voice; and yet on their being the least moved, though it was only from one part of the ship to the other, and that in their hammocks, they have immediately expired; and others, who have confided in their seeming strength, and have resolved to get out of their hammocks, have died before they could well reach the deck. And it was no uncommon thing for those who were able to walk the deck, and to do some kind of duty, to drop down dead in an instant, on any endeavours to act with their utmost vigour; many of our people having perished in this manner during the course of this voyage."

Post Mortem Examination

Dr. Lind has given, the result of his observations, drawn from the dissection of a considerable number of victims to this fatal malady, from which it appears that the true scorbutic state, in an advanced stage of the disease, consists in numerous effusions of blood into the cellular interstices of most parts of the body, superficial as well as internal, particularly the gums and

the legs; the texture of the former being almost entirely cellular, and the generally dependent state of the latter rendering those parts, of all others in the whole body, the most apt to receive and retain the stagnant blood, when its crasis comes to be destroyed; and it loses that glutinous quality, which, during health, hinders it from escaping through the pores in the coats of the blood vessels, or through exhalent extremities. A dropsical indisposition, especially in the legs, and breast, was frequently but not always observed in the subjects that were opened, and the pericardium was sometimes found distended with water.

The fleshy fibres were found so extremely lax and tender, and the bellies of the muscles in the legs and thighs so stuffed with the effused stagnating blood, that it was always difficult, and sometimes impossible, to raise or separate one muscle from another. He says that the quantity of this effused blood was amazing; in some bodies it seemed that almost a fourth part of the whole mass had escaped from the vessels; and it often lay in large concretions on the periosteum, and in some few instances under this membrane immediately on the bone. And yet, notwithstanding this dissolved and depraved state of the external fleshy parts, the brain always appeared perfectly sound, and the viscera of the abdomen, as well as those in the thorax, were in

general found quite uncorrupted. There were spots indeed, from extravasated blood, observed on the mesentery, intestines, stomach, and omentum; but these spots were firm, and free from any mortified taint, and more than once, an effusion of blood, as large as a hand's breadth, has been seen on the surface of the stomach; and what was remarkable, that very subject was not known, while living, to have made any complaint of sickness, pain or other disorder, in either stomach or bowels. M. Poupart in his account of the disease, as observed at the Hospital of St. Louis at Paris, has given a very ample description of the dissections of scorbutic patients. The principal phenomena described by him were the results of the general extravasation of blood, and of the dissolution and separation of parts naturally united. Thus the bodies of the muscles were often found swelled and hard, from the blood fixed among their fibres, so that the limbs remained bent or contracted; and the epiphyses of the bones were found separated, the cartilages of the sternum were loosened from their union with the bony part of the ribs, and the ligaments of the joints were corroded and loose. He adds that the mesenteric glands were generally obstructed and enlarged, and the spleen three times bigger than natural, and fell to pieces as if it consisted of coagulated blood.

Remote Cause.

The predisposing causes, or those circumstances which induce a predisposition to the complaint, are various. Preceding diseases, whether of the acute or chronic kind, render persons more liable to the scurvy, when the exciting causes exist: and inactivity and indolence greatly facilitate the attack of the malady. Men who are recovering from fevers, or who have been weakened by long attacks or relapses, most readily fall into scurvy; and the marines on ship-board, who have less work commonly suffer in a much larger proportion than the sailors. On the other hand, however, excessive fatigue and over exertion, which exhaust the strength, as well as want of sleep, contribute to accelerate the attack of scurvy. An attention to this point, was one of the most effectual means employed by Captain Cook for the prevention of scurvy among his crew, as well as the avoiding of cold and moisture from which much predisposition to the disease arises. A state of despondency and gloominess of mind contributes also materially to invite and aggravate the scurvy: it attacks the discontented and repining, while persons of more cheerful disposition escape. Hence perhaps, newly-impressed seamen are found to be particularly liable to it; and the inhabitants of besieged towns are observed to be susceptible of its impressions. The principal exciting cause of scurvy appears to be the use of a certain kind of diet; and it is probable that every species of diet, which, either

from being difficult of digestion or from containing but little nutriment, fails to nourish the body, is capable of producing the disease under certain circumstances: we say it is probable; for we shall have occasion to show hereafter, that this notion is not entirely consistent with all the facts, and is somewhat inconsistent especially with the nature of the remedies. As the disease is most frequently occasioned in modern times by a sea diet, it has been ascribed to the use of salted meats; but this opinion is altogether erroneous, and has been amply refuted by Drs. Lind, Milman and others. It has occurred, indeed, to a great extent, when salted meats were not used, but it has been equally prevalent when the diet consisted principally of farinaceous or other unfermented vegetable matters, such as hard biscuits, peas, and beans, or smoke-dried fish or flesh, cheese, &c. In some experiments made by Dr. Stark in his own person, relative to the effects of particular articles of diet, symptoms of scurvy were induced by living a short time exclusively upon sugar. And Dr. Nitsuchs observes, that in the Russian armies at the siege of Azoph, in 1736, and subsequently in their march to Oczakow, the scurvy prevailed to a great extent, although their diet did not consist of salt provisions. They had little fuel to enable them to dress their victuals, and the fat indigestible fish of the river Don, being half cooked, and their bread ill-baked induced frequent sickness, and ultimately the scurvy. A similar calamity as

remarked by Dr. Kramer, occurred in the imperial army of Hungary, about the same period, although the army had fresh beef in plenty: but their food consisted of a gross and viscid bread, or other farinaceous matters, and especially of a sort of glutinous pudding, called Kollatschen which was principally eaten by the Bohemians, who were indeed almost the only people who suffered from the scurvy. There is, no doubt, therefore, if we examine the history of the malady, that persons predisposed to it, if they live upon any species of indigestible food, whether it be of an animal or vegetable nature, whether preserved with salt, or not at all impregnated with it. — will be equally attacked with scurvy; and those persons are observed to suffer the most who make the least use of these indigestible substances. In all these instances, however, fresh vegetable substances did not probably constitute any considerable portion of the diet. Other exciting causes, however, must co-operate with this diet to produce the scurvy, especially in its severe degree. And hence whatever contributes to impair the health, and depress the mind, during the use of such food, materially accelerates the occurrence of scurvy, and we have already stated the effects of indolence, overfatigue, and the depressing passions, in pre=disposing the constitution to take on this disease. Indolence and inactivity conduce to excite the scurvy, because the hard and indigestible diet just alluded to requires a certain degree of exercise to subdue it in the stomach. The

influence of exertion was curiously exemplified in the cases of those persons who have wintered in high northern latitudes. The scurvy was the source of fatality which they had to dread: and it is singular, that those who went prepared to spend the winter in these frozen climates, and supplied with provisions, clothing, fuel, &c. have uniformly died of the scurvy: while those who have been accidentally left, without any provision, have escaped that disease and enjoyed good health. In 1633 two trials were made by the Dutch, of establishing wintering places at Spitzbergen on the coast of Greenland in latitude 77° or 78°. Seven sailors were left at each, amply furnished with every article of clothing, provision, and utensils, thought necessary or useful in such a situation. The journals of both companies are preserved. The men at Greenland began to make a constant fire to sit by in October, served out their allowance of brandy, and now and then killed a bear: but in March they were all ill of the scurvy, and on the 16th of April the first man died, and all the rest were entirely disabled, except one person. This poor wretch continues the journal to the last day of April, when they were praying for a speedy release from their miseries. They were all found dead. The men left at Spitzbergen killed but one for the whole time. The scurvy appeared among them as early as the 24th of November, and the first man died the 14th of January

the journal ends the 26th of February, and these too were all found dead. Accident, however, soon afterwards gave rise to an experiment which had a very different result. For on the same side of Spitzbergen, and in nearly the same latitude, a boat's crew, consisting of eight Englishmen, who had been sent ashore to kill deer, were by some mistake left behind, and reduced to the deplorable necessity of wintering in that dreadful country, totally unprovided with any of the necessaries. Taking advantage of a large substantial wooden building, erected for the use of the coopers belonging to the fishery, they rendered it warm and comfortable by building a small one within it, and by deer skin beds &c. They were tolerably supplied with fuel from old casks and boats, which they broke up, and before the cold weather set in, they laid in a considerable stock of venison, having killed a good number of deer, the greater part of which they roasted, and stowed in barrels, reserving some raw, which became frozen. This venison with a few sea-horses and bears which they killed from time to time, constituted their whole winter's provision, except a very unsavoury article, which they were obliged to make out with, at first two and afterwards four days in the week, which was whale's fritters, or the scraps of fat after the oil has been pressed out. Their only drink during the whole time was running water, procured from beneath the ice on the beach, till January; and afterwards snow water

melted by hot irons. The melancholy of their situation was aggravated by the absence of the sun from the horizon, from the 14th of October to the 3d of February, of which period twenty days were passed in total darkness. They contrived, however, to keep their fire and lamps continually burning during this period. At the approach of spring, they had the good fortune to kill several white bears which proved excellent food: and these, together with wild fowl and foxes which they caught, enabled them to dispense with their fasting days on the mouldy fritters, and soon improved their vigour. Upon this simple fare, without spirits or fermented liquors, they were able to pass this rigorous winter, unaffected by scurvy or any other disease, at the return of the ships on the 25th of May, they all appear to have been in health: and all returned in safety to their native country. A similar circumstance occurred to four Russians. In the year 1743, a Russian ship off East Spitzbergen was so enclosed with ice, that the crew apprehensive of being obliged to winter there, sent four of their men in a boat to seek for a hut, which they knew to have been erected near the coast. The hut was discovered; but the men on returning to the shore, found all the ice cleared away, and the ship no longer to be seen; and indeed it was never more heard of. Their diet and manner of living are the circumstances peculiarly connected with my subject. After fitting up their hut as comfortably as they could, and laying

in drift wood, collected on the shore, for fuel, they turned their attention chiefly to the procuring of provision. Three species of animals, which they caught and killed by various devices, constituted their whole variety of food. These were reindeer, white bears, and foxes. Thus flesh they eat almost raw and without salt; using by way of bread to it, other flesh, dried hard in smoke. Their drink was running water in the summer, and melted ice and snow in the winter. Their preservatives against the scurvy were, swallowing raw frozen meat broken into bits, drinking the warm blood of reindeer just killed, eating scurvy-grass, when they could meet with it, and using much exercise. By these means three of them remained entirely free from this disease, during the whole of their abode. The fourth died of it, after lingering on to the sixth year. It is remarked that this person was of an indolent disposition, and could not conquer his aversion to drinking the reindeers blood. They were strong and healthy at their return, but by habit had contracted an inability of eating bread, or drinking spirituous liquors.

Other circumstances, both on shipe-board and on land, by impairing the general vigour of the constitution, conspire to produce the scurvy. Thus it has been observed endemic at particular places, while others, when the same diet was used, remained entirely free from it. It is observed, that universally in all parts of the country, where the soil is fenny and damp, it rages with the greatest

violence; and that the weather has great influence upon it, southerly winds of long continued, multiplying the disease, and rainy seasons rendering it quite epidemic and malignant. The effect of certain depressing passions, not only in predisposing to the scurvy, but in exciting and aggravating it, has been strongly manifested. Vander Mye exhibits a curious and diversified picture of the operations of the passions of the mind during the famous siege of Breda, when the scurvy committed great havoc in that town. Upon the report of bad news, it always spread astonishingly: but it was in a manner altogether checked by the arrival of agreeable intelligence. And the writer of lord Anson's voyage observes, "This disease is likewise usually attended with a strange dejection of the spirits, and with shiverings, trembling, and a disposition to be seized with the most dreadful tremors on the slightest accident. Indeed it was most remarkable in all our reiterated experiences of this malady that whatever discouraged our people, or at any time damped their hopes, never failed to add new vigour to the distemper; for it usually killed those who were in the last stages of it, and confined those to their hammocks, who were ~~in any [illegible] [illegible] at~~ before capable of some kind of duty; so that it seemed as if alacrity of mind and sanguine thoughts were no contemptible preservatives from its fatal malignity."

Prevention of Scurvy.

It is customary after stating the symptoms and causes of any disease, to proceed to point out the proximate cause, of the malady, before treating of the methods of cure, which should generally be deduced from the consideration of the whole of these circumstances taken together. In this case, however, we can scarcely discuss the nature of the proximate cause, without a previous knowledge of the means by which the malady is prevented or removed; since these means lead to elucidate the nature of the symptoms which they remove. We shall therefore, first detail the means of prevention and cure.

The prevention of scurvy will consist chiefly in removing or counteracting the predisposing and exciting causes, which have already been enumerated. Much is done, therefore, by preserving a due degree of general health in the individuals exposed to the exciting causes; and especially by avoiding cold and moisture, by means of proper clothing, &c; and by avoiding indolence and inactivity on the one hand and overfatigue, watching, &c. on the other. The effects of the former are exemplified in the comparative exemption of even the petty officers in a ship of war, while the crew suffer severely. "The channel fleet," says Dr. Milman, "has often buried a hundred men in a cruise, and landed a thousand more afflicted with scurvy, and yet among these there has not been a petty officer:

How does the condition of the petty officer from that of the common sailor? The one as well the other is obliged to live on the ship's provision. The only difference is, that the petty officers sleep in close births, as they are called, with canvass hung around, in which they are sheltered from the inclemencies of the weather. Besides the advantage of warm cabins, they are more warmly clad, and having a greater plenty of clothes to shift, they are less liable to continue wet, or to be so unclean as the common men." But the security from scurvy, obtained by attention to those points of general health, was most strikingly manifested in the judicious management of Captain Cook, by which he was enabled to repeat the voyage, in which the scurvy had proved so fatal to Lord Anson's crew, without losing any men by that disease. The great navigator studied and enforced the rules of general health with great assiduity, and his success was complete. He was especially careful to guard against the too great fatigue of his men, and to secure them as much as possible from the effects of cold and moisture. In the first place, he divided them into three watches instead of two, [except upon some extraordinary occasion] by which means they had eight hours rest for four of duty, and did not get the broken sleep, which men in their situations have generally obtained. They had thus time to recruit their strength before they were summoned to return to their labour, and they were likewise thus less exposed to the weather, than if they had

been at watch and watch. If the men got wet, they had generally dry clothes provided to shift themselves. Proper methods were taken to keep the ships clean, and dry between decks. The hammocks and bedding, every day that was fair, were not only ordered upon deck, but each bundle was unlashed, and so spread out, that every part might be exposed to the air. Besides the ordinary methods of washing and scraping the decks. Captain Cook had some wood put into a proper stove, handled and carried successively, to every part below deck; which not only contributed to dry the ship, but by heating the impure air below low, and rendering it specifically lighter than the common air to make it rise and pass through the hatchways into the atmosphere. In the torrid zone, he shaded his people from the scorching sun, by an awning over his deck; while in his course under the antartic circle, he had a coat provided of a substantial woollen stuff, with the addition of a hood to cover their heads.

Captain Cook also attended to the nutriment of his men. Hard and salted meats require assistance in their solution and digestion in the stomach, and a plentiful supply of water was always carefully provided by him. Salt-water, indeed, may be rendered sweet by distillation, which deprives it of its saline parts, and may be made more palatable by impregnation with Carbonic acid gas, or with roots and acid juices. This method, however, was not known to Captain Cook.

In attending to the diet of his men, he would not suffer the fat, which is boiled out of salt beef and pork, to be given to his men, as is customary. It did not escape that sagacious officer's notice, that such a grossly indigestible matter had a great tendency to excite scurvy. Thus then by an attention to clean-liness and ventilation, by guarding against fatigue, cold, heat, wet, &c, and by providing at all times plenty of fresh water, Captain Cook's seamen lived with impunity on their salt provisions. And a similar instance is mentioned by Dr. Trotter, in the case of the Intrepid, a ship of sixty-four guns, with a complement of five hundred men, in Lord Rodney's fleet, which did not lose a man, except from wounds, for the space of five years and a half. "This ship was in a very sickly state when Captain Molley took the command of her, but by the complete mode of discipline, and attention to the cleanliness of the crew and ship, which he established, health was preserved in a climate reputed to be unwholesome; and that too, when exposed to the hardships which follow a state of frequent or constant preparation for action." Even when the exciting causes exist, therefore the scurvy may be prevented by extraordinary and continued discipline in the cure of the general health. Something still further, has been attempted, in the way of prevention, by diminishing the extent of the chief exciting cause; although it may be questioned, whether much

has been effected in this way. The Dutch were supposed to have preserved their seamen from scurvy by the use of sour-krout with their salt provisions, and this article was recommended to the British navy by Dr. Lind: but it is prepared by a sort of fermentation, which produces the acidity; and this sort of acetous acid, the product of fermentation does not appear to be a substitute for the acid of fresh vegetables. Dr. Trotter, however, is of opinion that the virtues of this substance as an antiscorbutic are very trifling, and that it has cost the British government in its preparation more than it is worth. Another substance has also been employed in the British fleet, as a substitute for fresh vegetables in preventing scurvy, on the recommendation of Dr. McBride, viz, the essence or extract of malt. It was recommended upon the hypothetical notion, that it contained much of the cementing principle, as he called it, or that principle, ~~or in caused it~~ which, when present in animal and vegetable substances, prevent the process of putrefaction; and that by restoring this principle to the blood, the diseases, which arise, like scurvy, from a putrid diathesis, would be prevented and cured. The truth however, is, that there is little or no carbonic acid in this substance; and the favourable accounts received at the admiralty of its beneficial effects, which induced them to establish the use of the essence of wort as a part of naval victualling, are to be ascribed rather

to its being a wholesome, nutritious, and digestible substance, consisting principally of vegetable mucilage with some sugar, than to any specific antiscorbutic properties. This appears to be the opinion of Dr. Porter; and Dr. Lind speaks of it only as, "a very nourishing liquor, well adapted for scorbutic patients." The following is an excellent mode of prescribing the malt in substance; when wanted for use, it is to be ground in a hand mill, and the infusion prepared from day to day, by pouring three measures of boiling water on one of the ground malt; the mixture being well mashed, it left to infuse for ten or twelve hours, and the clear infusion then strained off. The patients are to drink it in such quantities as may be deemed necessary, from one to three quarts in the twenty four hours; a panada is also to be made of it, by adding biscuit, and currants or raisins; and this palatable mess is used by way of solid food. This course of diet, like that of the recent vegetables, generally keeps the bowels sufficiently open; but in cases when costiveness nevertheless prevails, gentle laxatives must be interposed from time to time.

Newly brewed Spruce-beer made from a decoction of the tops of the Spruce-fir and molasses, is an excellent Antiscorbutic: it acts in the same way that the wort does, and will be found of equal efficacy, and therefore may be substituted.

Where the tops of the spruce-fir are not to be had, this beer may be prepared from the essence of spruce as it has been called, an article which keeps easily for a great length of time. But in situations where neither the one nor the other can be had, a most salutary mess may be prepared from Oatmeal, by infusing it in water, in a wooden vessel, till it ferments, and begins to turn sourish; which generally happens in moderately warm weather, in the space of two days. The liquor is then strained off the grounds, and boiled to the consistence of a jelly, which is to be eaten with wine and sugar. When the malt, spruce-fir &c, cannot be procured, especially on board of vessels, Surgeon Thompson recommends as an excellent substitute, the treacle beer, or hop-beer, and for which purpose he recommends that a quantity of hops and molasses should be taken on board of ships, which are likely to be long without refreshments; and from these a liquor not only extremely salutary, but pleasant may be prepared at sea with very little trouble or expense, by boiling the proportion of 10 pounds of hops, to 288 gallons of water; and adding one hundred weight of molasses, when the decoction is sufficiently cool. They should be well stirred together, then turned into casks, a little yeast added, and left to ferment. He also speaks of porter in the highest terms as a preventive of scurvy, and relates the happy effect, it produced in the crew of the frigate Richmond, who were afflicted with this disease. "We did not lose a man for a fortnight after

the use of the porter; which must be attributed entirely to the salutary influence of that liquor. For neither for some time before, nor after that period did a week pass without one, two, or more, having paid the debt of nature."

Among other means of preventing scurvy, Captain Cook had also a liberal supply of portable soup; of which the men had generally an ounce, three days in the week, boiled up with their peas; and sometimes it was served to them oftener, and when they could get fresh greens, it was boiled up with them, and made such an agreable mess, that it was the means of making the people eat a greater quantity of greens than they could otherwise have done; And what was still of further advantage, they were furnished with sugar in lieu of butter or oil, which is seldom of the sweetest sort: so that the crew were undoubtedly great gainers by the exchange.

There is another species of vegetable matter, however, which appears in some measure to supply the particular substance, which fresh vegetables afford, and which is used both as a preventive, and a cure for the scurvy, namely, the acids of limes, lemons, and other similar fruits, which the art of chemistry has for some time supplied in a concrete state. These substances, we beleive ~~are now~~ are now considered as among the necessaries for a long voyage, and are probably much more efficient than the sour-krout, essence of malt, &c.

Cure of Scurvy.

When the preventive measures have been neglected, or ineffectually employed, and the disease has already appeared it is very difficult to remove it, while the circumstances of diet, &c, remain unchanged. When these circumstances, however, admit of a change, experience has shown that the cure is very simple, and often very expeditious. A pure, dry, warm air, with the use of fresh vegetables, almost of any sort, commonly proves effectual. The instinctive feelings of the sick, indeed, direct them strongly to the use of the chief remedy; for there is perhaps no desire so intense as that which the scorbutic patient feels for the use of green vegetables, fruits, and acids; insomuch that the sailors of lord Anson's ship greedily devoured the grass, which was the first vegetable matter obtained. The vegetable and fruits which contain the greatest proportion of acid, are the most effectual remedies for the symptoms of sea-scurvy; whence sorrel and such like plants, but above all limes, lemons, oranges, apples, currants, &c. Act in a manner as specifics in relieving this disease. All succulent vegetables, and those especially which are of an aromatic nature, are useful, particularly when combined with the acid ones; whence scurvy-grass, horse-radish, cresses, and purslain, are ranked among the Antiscorbutics; and numerous plants have been specified by different writers as possessed of special virtues. On the whole, however, the acid juices appear to be the most

speedy and effectual remedies for scurvy, especially those which approach to the nature of the citric acid. The testimonies in favour of the specific curative powers of these acids in scurvy are so numerous as to leave no doubt of the fact. Even Dr. Lind, with whose hypothesis respecting the nature of the disease the fact was not quite compatible, admits, in his postscript, their striking efficacy. "To what has been already said of the virtues of oranges and lemons in this disease, I have now to add, that in seemingly the most desperate cases, the most quick and sensible relief was obtained from lemon juice; by which I have relieved many hundred patients, labouring under almost intolerable pain and affliction from this disease, when no other remedy seemed to avail." He also mentions, that the lemon juice when given by itself undiluted, was apt, especially if overdosed, to have too violent an operation, by occasioning pain and sickness at the stomach, and sometimes a vomiting; therefore found it necessary to add wine and sugar. A pint of Alladeira wine, and two ounces of sugar, were put to four ounces and a half of juice, and this quantity was found sufficient for weak patients to use in twenty four hours: such as were weak sipped a little of this frequently according as their strength would permit; others, who were stronger took about two ounces of it every two hours, and when the patients grew still stronger, they were allowed eight ounces of lemon juice in twenty four hours.

While this very pleasant mixture, which is both a cordial, and an Antiseptic, may be had it would be needless to think of prescribing any other: but when the fresh juice cannot be procured, we must have recourse to such other things as may be obtained. But the various modes of combining and administering these, so as to render them perfectly agreable to the stomach, must always be regulated by circumstances, and therefore it will be in vain to lay down particular directions; since all that we have to do is, to fix on such fruits and other fresh vegetables as can be most conveniently had and taken, and contrive to give them in those forms, either alone or boiled up with flesh-meat into soups, that will allow the patients to consume the greatest quantities. Dr. Trotter tells his the extraordinary cure of these scorbutic symptoms by the use of these acids, even though at the same time they produce a very lax or purging state of the bowels, and some degree of emaciation; while on the other hand, the use of fresh animal food, strong broths, and wine, produces comparatively very little benefit upon scorbutic persons, although debility is the most marked symptom of the disease. This diet and the Peruvian bark will often produce no favourable change upon scorbutic ulcers, and the most powerful stimulant applications will not alter the condition of these sores: yet in less than twenty-four hours after the use of lemon-juice, the livid complexion of the sores, with the black clot of blood on their surface, will often disappear,

and they will put on a florid and healthy character. The farther effects of the lemon acid are thus described by Dr. Trotter. "The patient in the inveterate stage of the disease seems to gather strength even from the sight of the fruit; the spirits are exhilarated by the taste itself; and the juice is swallowed with emotions of the most voluptuous luxury. The gums are gradually hardened, and the teeth fixed in their sockets. The dull eye and bloated looks in a few days put on the clear healthy complexion, which also extends to the whole surface of the body. The absorption of the effused blood in different parts goes on rapidly, and by marking the spots, you may calculate the progress of the absorption, and the cure of the disease. This absorption bespeaks a degree of stimulus communicated to the lymphatic system as well as the sanguiferous, as soon as the blood has received a sufficient quantity of the vivifying principle. From the effects of the juice upon the bile, the colour of the stools is changed, and a lax state of the bowels is the consequence. But it is to be observed, that this laxity of the intestines may be moderated by giving the fruit in smaller quantities, a speedy cure, however, demands that they should be given ad libitum, and the greater the number of lemons taken in a day, the recovery will be more rapid in proportion." While on the one hand, these fresh vegetables and vegetable acids, speedily remove the symptoms of scurvy, experience has fully ascertained, on the other, that the medicines called tonics, such as the

mineral acids, steel, Peruvian bark, and the various vegetable bitters, which have also been considered as Antiseptics, or antidotes of putrefaction, are incapable of affording any effectual relief. And wine, which has been found a valuable in some low fevers, gives but a momentary stimulus; but it does not retard the disease, nor afford any permanent relief alone. It was clearly proved, too, in Lord Anson's fleet and elsewhere, that abundance of fresh provisions of animal substances and fish, even with plenty of fresh water, did not tend to arrest the progress of the disease. The use of Mercury appears to be injurious under every stage of the scurvy.

In speaking of the predisposing causes of scurvy, we have mentioned the effect of the depressing passions in inducing and aggravating the disease; and we have now to mention, on the other hand, the remarkable effects of hope, and the exciting passions, in aiding the cure of the disease. The following striking example of this medicine of the mind is related by Vander Mye in his account of the disease, when it occurred during the siege of Breda, spreading despair and death around. "On the 2d of May 1625, when the prince of Orange heard of their distress, and understood that the city was in danger of being delivered up to the enemy by the soldiers, he wrote letters addressed to the men, promising them the most speedy relief. These were accompanied

with medicines against the scurvy, said to be of great price, but of still greater efficacy: many more were yet to be sent. The effect of this deceit was truly astonishing! Three small phials of medicine were given to each physician, not enough for the recovery of two patients. It was publicly given out, that three or four drops were sufficient to impart a healing virtue to a gallon of liquor. We now displayed our wonder-working balsams. Nor were even the commanders let into the secret of the cheat put upon the soldiers. They flocked in crowds about us, every one soliciting that part might be reserved for their use. Cheerfulness again appears on every countenance; and a universal faith prevails in the sovereign virtues of the remedy. The herbs now began to spring up above the ground, we of these made decoctions, to which worm-wood and Camphor where added, that by their prevalent flavour the medicine might appear of no mean efficacy. The stiff contracted limbs were anointed with wax melted in rape-seed, or linseed oil. The invention of new and untried physic is boasted; and amidst a defect of every necessary and useful medicine, a strange medley of drugs was compounded. The effect, however, of the delusion was really astonishing: for many were quickly and perfectly recovered. Such as had not moved their limbs for a month before were soon walking the streets sound, upright, and in perfect health. They boasted

of their cure by the princes remedy: the motion of their joints being restored by a simple friction with oil, nature now of itself well performing its office, or at least with a small assistance from medicine. Many who declared that they had been rendered worse by all former remedies which had been administered, recovered in a few days; to their inexpressible joy, and the no less general surprise by the taking [almost by their having brought to them] what we affirmed to be their gracious prince's cure."

Many remedies have been mentioned by different writers, who have treated of scurvy, and many local applications, and methods of curing particular urgent symptoms, such as haemorrhages, spongy gums, ulcerations, diarrhoea stiffness of the tendons, &c. have been detailed, but it unnecessary to repeat them; since the only effectual mode of alleviating particular symptoms is the radical cure of the constitutional disease. Dr. Trotter observes that, "fomentations, the warm-bath &c, have been often tried for the rigid tendons, and hardness of the muscles, but without effect: stimulant applications have been equally unsuccessful. For the difficult breathing and tightness about the breast, blisters and the whole train of expectorants are insufficient to relieve them. Opium itself, our last and only refuge in other cases, of acute pain, affords no refreshing sleep or ease to the scorbutic sufferer. We have heard much of sudorifics

opening the pores of the skin and softening the surface; but this is trifling with the complaint. It is only the product of fresh vegetation, that can administer to him the reviving cordial; and a few lemons, will do more to assuage his anguish than the whole art of pharmacy."

Proximate Cause.

Various hypotheses have been framed at different times, according to the prevalent pathological doctrines, to account for the phenomena of this singular and formidable disease; and like most other medical hypotheses, they have hinged chiefly upon two principles, by one of which they are referred to certain morbid conditions of the blood or circulating fluids, and by the other to morbid changes in the property of the living solids. If we take into consideration, however, the whole phenomena of the disease, its causes, and remedies, we shall find considerable difficulty in admitting either of these hypotheses exclusively, and not a little in giving any satisfactory view of the subject, even by allowing the partial truth of both.

All the old writers, being of the humoral school, maintained the doctrine of a morbid state of the fluids, as the proximate cause of scurvy. Boerhaave and his adherents referred the disease to an acrimony of the fluids, which they supposed would be of a different quality, according to the different causes which

produce it; thus it would be an alkaline acrimony from salt and putrid provisions, and putrid water, and an acid acrimony from bad sorts of bread or vegetable gluten, combined with a sedentary life. — Dr Cullen, too, though he relinquished much of the humoral pathology, was of opinion that scurvy was the effect of "a preter-naturally saline, and consequently dissolved state of the blood" which was occasioned by a greater advance towards putrefaction, from the absence of the corrective of vegetable matter. And sir John Pringle, maintained a similar doctrine that scurvy was the result of "gradually accumulating putrefaction" in the blood, from the putrescency of salted food, which he deemed the chief cause of the disease. In fact, the general opinion, for a long time, deemed scurvy the most characteristic example of a putrid disease. And this putridity of the fluids was inferred from the fetor of the breath, and of the ulcers; from the black colour and loose consistence of the blood; from the extensive haemorrhages, from the purple blotches, on the skin, &c. But this is a gratuitous and erroneous inference: for we have no less authority than that of Dr Lind, who made numerous experiments on the subject, for asserting that blood drawn from the scorbutic patients, even in a dying state, discovers no sensible test of either acrimony or putridity, by the taste or smell; that the serum of such blood is as tasteless, as the white of an egg, and without odour; that it coagulates in the air, no sooner than

the blood of healthy persons; and that thin slices of mutton, immersed in this serum, continued sweet and free from taint, as long as in the serum of persons in health. We know indeed, from actual experiments, made by Dr. Seybert, that if the smallest quantity of putrid matter be injected into the blood of pets, it is followed by speedy death. The ordinary secretions from the blood are not putrescent, as has been asserted, Dr. Lind affirms, "the urine in this disease, was not found to be more offensive to the smell, nor to corrupt sooner, than that of a person in health; and their sweat is not fetid, or more disagreable than when they are in health; the same may be said of their stools." The same experienced physician, justly observes, "the offensive smell from the mouth of scorbutic persons, when alive, seems to proceed solely from the corrupt state of the gums. For in the dead bodies, I never perceived any unusual marks of putrefaction; they were neither more offensive, nor liable to corrupt sooner, than any other corpse."

Can we account, then, for the phenomena of scurvy upon the other hypothesis which ascribes the malady to certain morbid conditions of the living solids? This view of the subject was ably advocated by Dr. Milman and in fact, it affords the most rational explanation of most of the symptoms, of the disease, according to the physiological and pathological doctrines, which modern enquiries have established. It is not at present, therefore, necessary for us to enter into any

minute detail of the symptoms, with the view of explaining them upon the principle of a weakened and impaired condition of the nervous system, and of the muscular irritability. This has been accomplished at great length, by Dr. Milman in an essay on scurvy and putrid fevers. This view of the subject appears to accord better, on the whole, with our knowledge of the predisposing and exciting causes of the disease above detailed. The various kinds of diet, under which scurvy occasionally originates, is ill calculated to produce any particular acrimony of the fluids; and the dry pulse and glutinous pudding of the Bohemians on shore could not have the same tendency to putrefaction as the salted animal diet of seamen. Yet all the substances might equally fail, from their indigestibility, or from the defect of nutritious matter which they contained, to support the strength and vigour of the moving fibre, and would equally contribute, therefore, to produce that languor of the vital powers, which is so conspicuous in the progress of scurvy. And all the predisposing causes, on the one hand, which are principally debilitating causes, fatigue, indolence, want of sufficient sleep, cold and moisture, and the means of prevention, on the other, which are such as support the general vigour of the constitution, moderate exercise, sufficient sleep, fresh air, warmth, &c, concur in convincing the state of the moving fibre to the source of the morbid symptoms. The same opinion is also farther supported

by the extraordinary influence of mental impressions, in producing and in preventing or curing the disease. These impressions cannot suddenly change the chemical condition of the fluids; but their influence upon the living solid, through the medium of the nervous system is manifest both in health and disease, to a degree that unlearned persons will scarcely credit. The discharges of blood from the relaxed and enfeebled orifices of the vessels, the gangrenous and consequently putrescent tendency of the gums, and other delicate parts, the fainting and even dying on the slightest exertion, the dropsical swellings, the labouring breath, the oppression about the heart, &c, appear to be the result of diminished strength in all the muscles, and of enfeebled action in all the vessels, the consequences of a general failure of the vital or nervous power.

Such, then, appears to be the advantage, in point of argument and analogy, which the doctrine of diseased solids possesses over that of acrimony and putrefaction in the fluids. Nevertheless this theory is by no means satisfactory: it is in some measure, indeed, incompatible with the most striking and well ascertained fact, that scurvy is not curable by those means which appear to contribute in general to the strength and activity of the solids, such as fresh animal food, wine, bark, soups, &c; while it is speedily and certainly removed by the use of vegetable acids, which contain no nutritive quality, and are so far destitute of corroborating

power, that they even induce emaciation, while they cure the disease. In truth we can give no satisfactory theory of this disease; but our possession of a certain remedy, and our knowledge of the means of prevention, may fairly supersede all hypothesis upon the subject. In this, and in all other diseases, experience and observation are the only guides which the judicious physician will follow. The instinctive demands of the sick point out the ~~disease~~ source of relief, as hunger and thirst lead us to food and drink; and it is enough to have observed, that by gratifying these demands the disease is cured, and to have inferred, that by anticipating it, is prevented from occurring.

Before we conclude, however, we may be allowed to notice one theory, to which modern chemistry has given rise, but which appears to us to be as imperfectly developed as those to which we have already alluded. Dr. Trotter has advanced this doctrine; and we believe Dr. Beddoes has maintained a similar opinion. As the acidifying principle which exists, but is rather loosely combined in the vegetable acids, and green vegetables, [the oxygen of modern nomenclature] appears to be wanting, not only in the salted and other animal substances, but also in the farinaceous and unfermented vegetable food, which has given rise to scurvy, it has been suggested, that this oxygen may be the remedy for scurvy, and its absence from the solids and fluids of the body, the proximate cause of the

disease. This supposition, Dr. Trotter considers as further confirmed by the blackness of the blood discharged, and by the speedy change to the florid hue, which the fungous ulcerations assume, within a few hours after the acids have been administered. But it is well known, that such a change is always the result of the contact of oxygen with the blood, and that it takes place regularly in the lungs, during respiration, the black blood of the veins being converted into florid arterial blood by that process. There is some plausibility in this view of the subject; but it affords no means of explaining the concourse of the symptoms, and does not lead us to any constitutional expedients for the cure. This gentlemen, brings to a conclusion, what I have to say on this subject. It being merely a brief description of the disease in general, with the cause, cure, and nature of said disease; as procured from the various authors on the subject. And should this attempt, being in compliance with a rule of the University, meet your approbation; that will amply compensate for all the time spent, and labour bestowed.